

# What Do You Mean

*If rigor is the Holy Grail of high school reform, let's make sure it is worth the quest.*

**Elliot Washor and  
Charles Mojkowski**

**E**ducation reformers are currently championing renewed rigor in high schools. Rigor is the lead component of the new three Rs in education, joining *relevance* and *relationships* as the Holy Grail many seek for secondary schools.

Eager to promote rigorous learning, many districts have ramped up efforts to produce what they consider a more rigorous (read college-ready) high school curriculum and to prepare teachers to deliver it. States and districts, prompted in part by No Child Left Behind mandates, are moving beyond specifying what students should know and be able to do to delineating exactly *how* such learning is to be accomplished. It is appropriate, therefore, to ask (taking the lead from Seymour Sarason's 2004 book, *And What Do You Mean By Learning?*), "What do you mean by rigor?"

From our examination of rigor in both academic and nonschool learning and work among students in Big Picture schools, we have derived several distinguishing qualities of rigor. The Big Picture is a school reform design committed to providing quality



education for underserved urban students. Through this work, we have uncovered strategies that curriculum designers and teachers can use to bring authentic rigor to student work. Truly rigorous learning in schools would revitalize the prevailing paradigm of teaching and learning, a paradigm largely devoid of student engagement that often leaves the practical, creative, and analytic intelligences languishing (Rose, 2004; Sternberg, 2003).

## **Rigor: How the Prevailing View Falls Short**

Let's look at what those advocating for "increased rigor" are seeking. Our sense is that for many people, a rigorous secondary school curriculum means one with more than the current average requirements—four years of math and science rather than three, students reading 10 novels rather than five, and

so forth. Kay and Houlihan (2006), for example, argue that success in the 21st century requires mastery that extends beyond the core subject areas to include greatly expanded content, learning and thinking skills, and information and communications technology literacy.

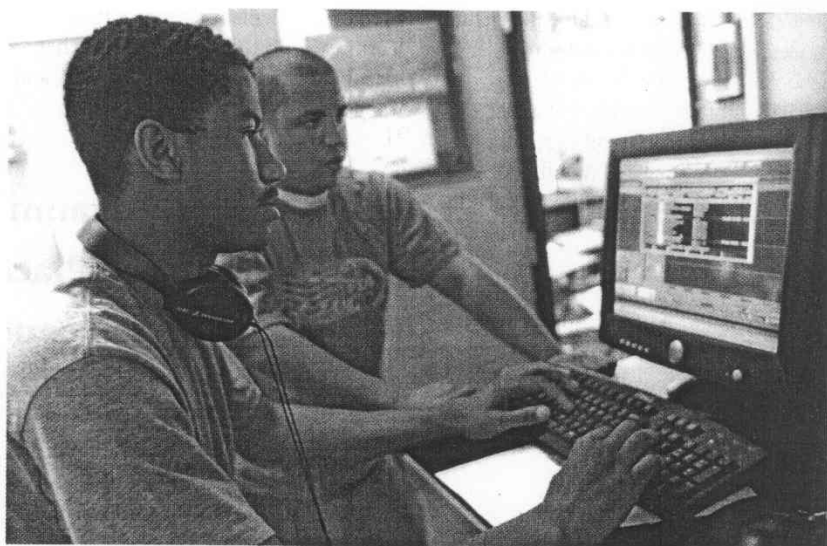
We see such expectations as falling far short of the true rigor students need. Curriculum developers, teachers, and even students often construe rigor narrowly. Their constructions of rigor reflect neither the processes of authentic academic work nor the kind of environment students need to do such work. These misunderstandings unduly constrict strategies for promoting intense, focused learning in schools, and they underestimate how discipline and cross-discipline knowledge and skills can be applied in real-world contexts.

# by Rigor?

A narrow view of rigor also fails to exploit the potential dynamic operating among the concepts of relationships, relevance, and rigor. Building relationships is the essential foundation; from that foundation, the teacher can identify kinds of learning that will be most relevant for each student. Getting relationships and relevance right prepares students to embrace rigorous learning opportunities.

Equally troubling are questions of equity around race and class raised by prevailing interpretations of rigor across schools and students. It is interesting to note, for example, that what constitutes a "rigorous" curriculum in New York City's top 200 schools—rich projects and time for music and art—is markedly different from the skills worksheets given to students in the remaining 800 schools and labeled as "rigorous" for those environments (Saulny, 2005). Such realities are particularly serious when curriculum and pedagogy leave no place for understanding the whole child—and how the conditions that child experiences outside school affect learning.

Truly rigorous learning—both academic and nonacademic—involves deep immersion in a subject over time, with learners using sophisticated texts, tools, and language in real-world settings and often working with expert practitioners who serve as mentors. In such settings, students—like academicians and clinicians who are rigorous about their work—encounter complex, messy problems for which tools and solutions may not be readily apparent or available. Their work is



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open to peer and public scrutiny.

Rigorous learning and work are found in many contexts—from the hospital operating room and the pharmaceutical lab to the steel mill and the oil drilling rig. The often exaggerated distinctions between "manual labor" and "mind work" are rapidly blurring. For example, we see rigor in the work of a New York City restaurateur who, while balancing the restaurant's accounts and managing his staff, still finds time to catch some of the fish his restaurant serves. He has become an

expert in nearly every species of fish to help bring his customers the finest dining experience (Singer, 2005).

We see rigor equally in the work of winners of the Intel high school science competition. Students from Ward Melville High School in Long Island, New York, work in labs side by side with professors and graduate students at the State University of New York in Stony Brook. The high school's close working relationship with the university enables these high school students to work on cutting-edge scientific investigations (Winerip, 2005).

A rigorous experience is reflective and intimate. A rigorous project causes students to take some type of action, to develop their own questions, to observe and retain key information, and to realize how hard it is to do something well. Through such projects, students develop self-awareness and build

ownership of their ideas, actions, and creations. They scrutinize and challenge original assumptions. They see that their learning and work are never completed.

### What Rigor Looks Like

We see rigorous learning in action as we work with Big Picture schools around the United States. About 24 schools in a dozen communities throughout the United States have adopted the Big Picture model, which was pioneered at the Met School in Providence, Rhode Island.

The senior thesis project of a Met student named Cory typifies rigorous learning. Cory spent 10 months photographing a local landmark called the Old Royal Mill, working with a professional photographer as his mentor. Cory not only perfected his photographic technique, but—guided by teacher Charly Adler—he also studied the physics of light and the lenses and chips that capture and process light. He studied the chemistry of producing photographs from old-fashioned cameras as well as film processing. Cory explored composition in both art and writing so that he could write more effectively about his artistic process and his photographs. He consulted with other photographers, read and researched, and spent hours at various times of the day taking photographs and analyzing their technical and aesthetic qualities.

Finally, Cory exhibited a portfolio of his photographs at the Met School's bookstore and café. His reflection on the project shows the depth of his exploration:

I grew up around [the Old Royal Mill], although not thinking much of it. I became further fascinated by it when I was 16. The show hanging in the gallery where I was doing an internship at the time featured a collection of works done by an artist named Jennifer Jutra. The exhibition consisted of a series of color photographs taken in the mill. The work captivated me and left me with questions as to how I could have lived so close to such a beautiful place and never had any interest what-

soever in exploring it. It would take me several years to do so. . . . The body of work you see here represents 10 months of shooting and, consequently, 10 months of discovery: discovery within the [mill] buildings, discovery within the community built around them, and discovery within myself and my own creative nuances.

Cory's progress shows that getting relationships and relevance right prepares students to embrace rigorous learning opportunities. Cory's teacher was there when he was emotionally and intellectually ready for the rigorous challenges of this project.

## One need only examine the typical high school Advanced Placement science course to see a distorted conceptualization of rigor.

As Mike Rose argues in *The Mind at Work: Valuing the Intelligence of the American Worker* (2004),

We mistake narrowness for rigor, but actually we are not rigorous enough. . . . [Rigor] demands more, not less, from those of us who teach, who organize work, or who develop social policy. To affirm this conception of mind and work is to be vigilant for the intelligence not only in the boardroom but on the shop floor; in the laboratory and alongside the house frame; in the workshop and in the classroom. This is a model of mind that befits the democratic imagination. (p. 216)

### Strategies for Increasing Rigor

Educators can bring increased rigor to student learning and work by using the following strategies that have proven effective in Big Picture schools:

**Work with students' passions and interests.** Students spend considerable in-school and out-of-school time on learning and work they care about. After students demonstrate their commitment to their projects, teachers can more easily introduce into projects the essential elements of rigor—complexity, breadth and depth, connec-

tions, and cross-disciplinary work.

**Connect learning to real-world contexts.** In nonschool settings, students encounter messiness and complexity. They learn how the real world operationally defines rigor; they observe adults doing focused, difficult work; and they connect to the knowledge and skills within and across disciplines.

**Build relationships.** In their projects, students build two broad kinds of relationships—with people and with disciplines of knowledge. Teachers help students find and communicate with adults who are working on similar interests and projects. Students learn how to

engage these adults in serious conversations about their work and to observe how they go about that work. What kind of problems do these adults confront, and how do they solve them? How do they network with others working on similar problems? Teachers also help students pursue relationships among their projects and other disciplines. For example, Cory's mastery of photography was deepened by his understanding of physics and chemistry and his knowledge of the essay form.

**Address the head, hand, heart, and health as one.** Rigor in the nonschool world often finds its expression in making, manipulating, performing, reading, and researching. Learning that is centered on abstract ideas and learning that is centered on creating artifacts are equally valued in the nonacademic world; indeed, in most cases, concrete artifacts are the real locus of learning and work.

**Assess rigorously over time.** Big Picture teachers use assessment processes that accommodate the complexity of rigorous student learning, including assessing the processes and techniques the student

employs. Exhibitions, project reports, and narrative assessments are our primary vehicles for assessing the depth, breadth, and quality of student learning. For instance, to demonstrate his learning, Cory formally exhibited his work and received critiques from experienced photographers (including his mentor), teachers, and other students. These critiques addressed not only his photographs, but also his accompanying written and oral explanations.

Teachers who employ these strategies holistically make possible more complex student projects. They require increasingly more sophisticated student work. They push each student to the edge of his or her competence and bring forth an extraordinary depth and breadth of learning.

### Getting to the Third R

Ultimately, schools and classrooms need to enhance students' abilities to bring rigor to their own learning. We must show students how to apply rigorous standards, first with respect to their interests, and then with respect to all their learning and work. Such capacities lead the student to resiliency as a learner and a person.

The strategies we advocate stand in sharp contrast to the practice of applying grade-level expectations uniformly to an entire class. The intensity of truly rigorous learning must not be constrained in favor of covering quantities of concepts, formulas, and facts. One need only examine the typical high school AP science course to see a distorted conceptualization of rigor, where students learn a lot *about* science without actually *doing* science in any real-world sense.

We operate on the assumption that hands-on work challenges the mind. The processes of making and using objects are among the most rigorous learning processes we have (Borg, 1999), and we have found that students are in love with the continual exploration of the world through hands-on manipulation. What could be more academic than developing ideas from

experiences? Yet, most schools separate students' hands from their minds, minimize exploration, and narrow risk to interaction with a piece of paper or a computer.

Many high schools are attempting to build more meaningful relationships with students. Some are attempting to make learning more relevant by appealing to students' interests. Far fewer schools, however, fully exploit the power of relationships and relevance to bring rigor to student learning. The powerful combination of rigor, relevance, and relationships exemplified in Cory's project is what teachers must help students create for themselves. ■

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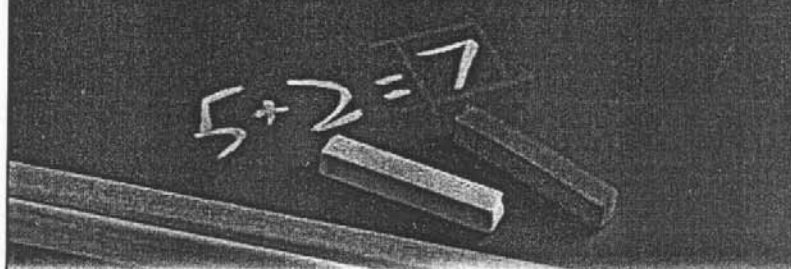
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